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58467 7590 11/19/2009

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P.O. BOX 398
AUSTIN, TX 78767

EXAMINER

TECKLU, ISAAC TUKU

ART UNIT

PAPER NUMBER

2192

DATE MAILED: 11/19/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/620,747

07/16/2003

Mark S. Moir

6000-33600

8970

TITLE OF INVENTION: OBSTRUCTION-FREE MECHANISM FOR ATOMIC UPDATE OF MULTIPLE NON-CONTIGUOUS LOCATIONS IN SHARED MEMORY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	02/19/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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58467 7590 11/19/2009

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/620,747 07/16/2003 Mark S. Moir 6000-33600 8970

TITLE OF INVENTION: OBSTRUCTION-FREE MECHANISM FOR ATOMIC UPDATE OF MULTIPLE NON-CONTIGUOUS LOCATIONS IN SHARED MEMORY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1510 \$300 \$0 \$1810 02/19/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
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TECKLU, ISAAC TUKU 2192 717-153000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,747	07/16/2003	Mark S. Moir	6000-33600	8970
58467	7590	11/19/2009	EXAMINER	
MHKKG/SUN P.O. BOX 398 AUSTIN, TX 78767			TECKLU, ISAAC TUKU	
			ART UNIT	PAPER NUMBER
			2192	
DATE MAILED: 11/19/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1038 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1038 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/620,747	MOIR ET AL.	
	Examiner	Art Unit	
	ISAAC T. TECKLU	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/06/09.
2. ☒ The allowed claim(s) is/are 1-23, 25-43, 46, 44-56 and 58-59 (renumbered as 1-54).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

/Isaac T Tecklu/
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192

DETAILED ACTION

1. Claims 24, 44-45, 47 and 57 have been cancelled.
2. Claims 1-23, 25-43, 46, 48-56 and 58-59 are allowed.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appear below. Should the change and/or additions be unacceptable to the Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such amendment, it MUST be submitted no later than the payment of issue fee.

Authorization for examiner's amendment was given in a telephone interview with Robert C. Kowert, Reg. No. 39,255 on October 26, 2009 to put the case in condition for allowance.

4. The Claims are amended, as presented below, to adopt the changes provided by Applicant's representative on October 26, 2009.

IN THE CLAIMS:

The listings of claims below will replace all prior versions, and listings, of claims in the application.

Please cancel claims 24, 47 and 57 and amend claims 6, 22, 25, 27, 42, 46, 48 and 56 as follows:

1. (Previously presented) A method in a computer system, the method comprising:

defining a plurality of transactionable locations, wherein individual ones of the transactionable locations encode respective values and are owned by no more than one transaction at any given point in a multithreaded computation;

for a particular non-blocking multi-target transaction of the multithreaded computation targeting two or more of the plurality of transactionable locations, attempting to acquire ownership of each of the transactionable locations targeted thereby, wherein the ownership acquiring wrests ownership from another non-blocking transaction that owns the targeted transactionable location without the other non-blocking transaction releasing ownership; and

once ownership of each of the targeted transactionable locations has been acquired, attempting to commit the particular non-blocking multi-target transaction using a single-target synchronization primitive to ensure that, at the commit, the particular non-blocking multi-target transaction continues to own each of the targeted transactionable locations, wherein individual ones of the non-blocking multi-target transactions do not contribute to progress of another.

2. (Previously presented) The method of claim 1,

wherein the ownership wresting employs a single-target synchronization primitive to change status of the wrested-from transaction to be incompatible with a commit thereof.

3. (Previously presented) The method of claim 2,

wherein, as a result of the status change, the wrested-from transaction fails and retries.

4. (Previously presented) The method of claim 2,
wherein the wrested-from non-blocking transaction is itself a non-blocking multi-target transaction.
5. (Original) The method of claim 1, further comprising:
on failure of the commit attempt, reacquiring ownership of each targeted transactionable location and retrying.
6. (Currently amended) The method of claim 1,
wherein no active transaction [[may]] is able to prevent another transaction from
wresting therefrom ownership of transactionable locations targeted by the
active transaction.
7. (Original) The method of claim 1,
wherein the ownership acquiring employs a single-target synchronization primitive to
update the ownership of the targeted transactionable location.
8. (Original) The method of claim 1,
wherein each encoding of a transactionable location is atomically updateable using a
single-target synchronization primitive.
9. (Original) The method of claim 1,

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wherein the individual transactionable location encodings further include an identification of the owning transaction's corresponding value for the transactionable location.

10. (Original) The method of claim 1, further comprising:
accessing values corresponding to individual ones of the transactionable locations using a wait-free load operation.

11. (Original) The method of claim 1,
wherein the transactionable locations directly encode the respective values.

12. (Original) The method of claim 1,
wherein the transactionable locations are indirectly referenced.

13. (Previously presented) The method of claim 1,
wherein the transactionable locations are encoded in storage managed using a non-blocking memory management technique.

14. (Original) The method of claim 1,
wherein the transactionable locations, if unowned, directly encode the respective values and otherwise encode a reference to the owning transaction.

15. (Original) The method of claim 1,
wherein the single-target synchronization primitive employs a Compare-And-Swap (CAS) operation.

16. (Previously presented) The method of claim 1,
wherein the single-target synchronization primitive employs a Load-Linked (LL) and
Store-Conditional (SC) operation pair.

17. (Original) The method of claim 1,
wherein the single-target of the single-target synchronization primitive includes at least a
value and a transaction identifier encoded integrally therewith.

18. (Previously presented) The method of claim 1,
wherein the non-blocking multi-target transaction comprises a multi-target compare and
swap (NCAS) operation.

19. (Previously presented) The method of claim 1,
embodied in operation of an application programming interface (API) that includes a
load operation and a multi-target compare and swap (NCAS) operation.

20. (Original) The method of claim 19,
wherein the load operation is wait-free.

21. (Previously presented) The method of claim 1,
embodied in operation of an application programming interface (API) that provides
transactional memory functionality.

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22. (Currently amended) A computer-readable storage medium storing program instructions computer-executable to implement:

a plurality of non-blocking, multi-target transactions;

wherein the program instructions comprise:

instances of one or more single-target synchronization primitives executable

to attempt to acquire, for a particular non-blocking multi-target transaction, ownership of two or more transactionable locations targeted by the non-blocking multi-target transaction so that ownership is wrested from respective other ones of the non-blocking multi-target transactions that own respective ones of the two or more targeted transactionable locations without the respective other ones of the non-blocking multi-target transactions releasing ownership;
and

a particular single-target synchronization primitive executable to ensure that, at commit, the particular non-blocking multi-target transaction continues to own each of the two or more targeted transactionable locations; and

wherein individual ones of the non-blocking multi-target transactions do not contribute to progress of others.

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23. (Previously presented) The storage medium of claim 22, wherein the program instructions are further executable to implement a concurrent computation, and wherein execution of the concurrent computation invokes the non-blocking multi-target transactions.

24. (Cancelled)

25. (Currently amended) The storage medium of claim [[24]] 22, wherein to wrest ownership, the program instructions are further executable to implement an instance of a single-target synchronization primitive changing status of a wrested-from transaction to be incompatible with a commit thereof.

26. (Previously presented) The storage medium of claim 25, wherein, as a result of the status change, the program instructions are further executable to implement the wrested-from transaction eventually failing and retrying.

27. (Currently amended) The storage medium of claim 22, wherein no active transaction [[may]] is able to prevent another transaction from wresting therefrom ownership of transactionable locations targeted by the active transaction.

28. (Previously presented) The storage medium of claim 22, wherein the two or more transactionable locations directly encode respective values.

29. (Previously presented) The storage medium of claim 22,

wherein the two or more transactionable locations are indirectly referenced.

30. (Previously presented) The storage medium of claim 22,
wherein the two or more transactionable locations are encoded in storage managed using
a non-blocking memory management technique.

31. (Previously presented) The storage medium of claim 22,
wherein the two or more transactionable locations, if unowned, directly encode
respective values and otherwise encode a reference to an owning transaction.

32. (Previously presented) The storage medium of claim 22,
wherein at least some instances of the one or more single-target synchronization
primitives employ a Compare-And-Swap (CAS) operation.

33. (Previously presented) The storage medium of claim 22,
wherein at least some instances of the one or more single-target synchronization
primitives employ a Load-Linked (LL) and Store-Conditional (SC) operation pair.

34. (Previously presented) The storage medium of claim 22,
wherein at least some of the non-blocking multi-target transactions comprise a multi-
target compare and swap (NCAS) operation.

35. (Previously presented) The storage medium of claim 22,

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wherein the program instructions comprise operations concurrently executable by one or more processors to operate on state of the two or more transactionable locations.

36. (Previously presented) The storage medium of claim 22,
wherein at least some of the non-blocking multi-target transactions are defined by an application programming interface (API) that includes a load operation and a multi-target compare and swap (NCAS) operation.

37. (Previously presented) The storage medium of claim 22,
wherein at least some of the non-blocking multi-target transactions are defined by an application programming interface (API) that provides transactional memory functionality.

38. (Previously presented) The storage medium of claim 22,
wherein the non-blocking multi-target transactions are obstruction-free, though not wait-free or lock-free.

39. (Previously presented) The storage medium of claim 22,
wherein the program instructions do not guarantee that at least one interfering concurrently executed non-blocking multi-target transactions makes progress.

40. (Previously presented) The storage medium of claim 22,

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wherein the program instructions are further executable to implement a contention management facility configured to facilitate progress in a concurrent computation.

41. (Previously presented) The storage medium of claim 40,
wherein execution of the contention management facility ensures progress of the concurrent computation.

42. (Currently amended) The storage medium of claim 40,
wherein the contention management facility is modular such that employing alternative contention management strategies ~~may be employed without affecting~~ does not affect correctness.

43. (Previously presented) The storage medium of claim 40,
wherein the contention management facility allows changes in contention management strategy during a course of the concurrent computation.

44. (Cancelled)

45. (Cancelled)

46. (Currently amended) A computer readable storage medium storing program instructions computer-executable to implement:

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instantiation of two or more transactionable locations in shared memory configured to individually encapsulate values that ~~[[may be]]~~ are targeted by concurrent executions of non-blocking multi-target transactions; and

one or more instances of a non-blocking multi-target transaction that upon execution of a particular instance thereof, attempts to acquire ownership of each of a plurality of transactionable locations targeted thereby and, once ownership of each of the plurality of targeted transactionable locations has been acquired, attempts to commit the particular instance using a single-target synchronization primitive to ensure that, at the commit, the particular instance continues to own each of the plurality of targeted transactionable locations~~[[,]]~~;

wherein the ownership acquiring wrests ownership from another transaction that owns one of the plurality of targeted transactionable locations without the other transaction releasing ownership; and

wherein execution of no one of the non-blocking multi-target transaction instances contributes to progress of another.

47. (Cancelled)

48. (Currently amended) The storage medium of claim ~~[[47]]~~ 46,
wherein the another transaction is another concurrently executing instance of the non-blocking multi-target transaction.

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49. (Previously presented) The storage medium of claim 46, wherein at least some instances of the single-target synchronization primitive employ a Compare-And-Swap (CAS) operation.
50. (Previously presented) The storage medium of claim 46, wherein at least some instances of the single-target synchronization primitive employ a Load-Linked (LL) and Store-Conditional (SC) operation pair.
51. (Previously presented) The storage medium of claim 46, wherein the single-target of the single-target synchronization primitive includes a value and an owning transaction identifier encoded integrally therewith.
52. (Previously presented) The storage medium of claim 46, wherein the program instructions are embodied as an application programming interface software component combinable with application program code to facilitate execution of the application program code as a multithreaded computation.
53. (Previously presented) The storage medium of claim 46, wherein the non-blocking multi-target transaction implements a multi-target compare and swap operation (NCAS).
54. (Previously presented) The storage medium of claim 46,

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wherein the non-blocking multi-target transaction implements transactional memory functionality.

55. (Previously presented) The storage medium of claim 46, wherein the computer readable storage medium includes at least one medium selected from the set of a disk, a tape and another magnetic, optical, or electronic storage medium.

56. (Currently amended) An apparatus, comprising:
one or more processors;
one or more data stores addressable by each of the one or more processors; and
means for coordinating concurrent non-blocking execution, by the one or more processors, of non-blocking multi-target transactions that attempt to acquire ownership of each of a plurality of transactionable locations targeted thereby and, once ownership of each of the plurality of targeted transactionable locations has been acquired, attempt to commit a particular instance thereof using a single-target synchronization primitive to ensure that, at the commit, the particular instance continues to own each of the plurality of targeted transactionable locations, wherein the ownership acquiring wrests ownership from another transaction that owns one of the plurality of targeted transactionable locations without the other transaction releasing ownership, and wherein none of the non-blocking multi-target transaction contributes to progress of another.

57. (Cancelled)

58. (Previously presented) The apparatus of claim 56,
wherein the wresting means includes means for ensuring that status of the wrested-from
transaction is incompatible with a successful commit thereof.

59. (Previously presented) The apparatus of claim 56, further comprising:
means for managing contention between interfering executions of the non-blocking
multi-target transactions.

--END--

Allowable Subject Matter

5. The following is an examiner's statement of reasons for allowance:

As applicant pointed out under Remark section, pages 14-18, Daynes (US 6,182,186 B2), taken either singly and/or in combination with other cited prior arts, do not teach the combined functional limitations of for a particular non-blocking multi-target transaction of the multithreaded computation targeting two or more of the plurality of transactionable locations, attempting to acquire ownership of each of the transactionable locations targeted thereby, wherein the ownership acquiring wrests ownership from another non-blocking transaction, that owns the targeted transactionable location without the other non-blocking transaction releasing ownership; and once ownership of each of the targeted transactionable locations has been acquired, attempting to commit the particular non-blocking multi-target transaction using a single-target synchronization primitive to ensure that, at the commit, the particular non-blocking multi-target transaction continues to own each of the targeted transactionable locations, wherein individual ones of the non-blocking multi-target transactions do not contribute to progress of another, as recited in such manners in each of independent claims 1, 22, 46 and 56.

Prior arts of record do not teach and/or suggest these claimed limitations, thus, all remaining pending claims 1-23, 25-43, 46, 48-56 and 58-59 are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ISAAC T. TECKLU whose telephone number is (571) 272-7957. The examiner can normally be reached on M-TH 9:300A - 8:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Isaac T Tecklu/
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192